

# ESKOM LUSIKISIKI CNC OPERATION CENTRE

## CONTACT CENTRE: NEW CONSTRUCTION

Erf: 351 AND 359 LUSIKISIKI EASTERN CAPE



## DESIGN REPORT

02 DECEMBER 2024

ARCHITECT	XABISO SIDLOYI
REGISTRATION NUMBER	SACAP 7814
SIGNATURE	

## **Table of Contents**

1. INTRODUCTION .....	2
2. PROFESSIONAL SERVICE .....	2
3. CLIENT'S BRIEF .....	2
4. SCOPE OF WORK.....	2
5. CIVIL ENGINEERING SERVICES .....	7
6. STRUCTUREAL ENGINEERING SERVICES .....	12
7. ELECTRICAL ENGINEERING SERVICES .....	14
8. MECHANICAL ENGINEERING SERVICES.....	17
9. DESIGN APPROACH AND METHODOLOGY .....	20
10. DESIGN REQUIREMENTS.....	22
11. DESIGN DESCRIPTION, CALCULATIONS AND DESIGN DATA.....	22
12. SAFETY FACTORS ADOPTED.....	24
13. NORMS AND STANDARDS USED .....	24
14. DETAIL DESIGN DRAWINGS .....	25
15. COST ESTIMATE .....	25
16. PROGRAMME .....	25

## **List of annexure**

Annexure A: DRAWING LIST

Annexure B: PRELIMINARY COST ESTIMATE

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## **1. INTRODUCTION**

Eskom Contact Centre is situated in Lusikisiki Township, Eastern Cape. The main access point lies on the southern boundary, on a gravel road which leads away from the residential area on the southern side of the site. Site sits approximately 0.50 km south east of Lusikisiki CBD approximately 1000m on the southwestern side of the R61 road to Xura, in the Ingquza Local Municipality.

## **2. PROFESSIONAL SERVICE**

Eskom appointed Archworxs Architects and Project Managers C.C as Principal Agent & Architects on the second of May 2019 to undertake the design for the Contact Centre (new construction).

Archworxs design architects appointed the balance of the team members & the full professional team is listed below.

- Principal Agent & Architect: Archworxs Architects and Project Managers C.C
- Quantity Surveyor: Setu Quantity Surveyors
- Electrical & Mechanical Engineers: RNA Consulting
- OHS Consultant: To be appointed
- Civil & Structural Engineer: Sinako Consulting

The appointment of the professional team is for a full service, from project inception & design to construction supervision & close-out.

## **3. CLIENT'S BRIEF**

- i) New structures to include: Customer service Centre, equipment store, general store, guard house, ladder rack, wash bay, technical service Centre, telecom tower and oil bund.
- ii) The estimated contract period is 20 months

## **4. SCOPE OF WORK**

The professional team conducted a site assessment & followed it up with a few more visits to discuss the finer project details with the Contact Centre manager. The scope of work was developed from the client's brief & itemized below for ease of reference:

### **4.1 New structures**

- Accommodation
- Customer Service Centre
- Equipment store
- General Store
- Technical service Centre
- Guard hut
- Ladder rack

- Wash bay
- Telecom tower
- Covered parking
- Oil bunds
- Refuse

## 4.2 External Finishes

### a) Accommodation

- Walls: Face brick finish, roller course at lintol level and stretcher bond at FFL
- Roof: Factory painted kliplok roof sheets
- Doors & Windows: As per the architects Doors and window schedule drawing (1214/WD/079)

### b) Customer Service Centre

- Walls: Face brick finish, roller course at lintol level and stretcher bond at FFL
- Roof: Factory painted kliplok roof sheets
- Doors & Windows: As per the architects Doors and window schedule drawing (1214/WD/017)

### c) Equipment store

- Walls: Face brick finish, roller course at lintol level and stretcher bond at FFL
- Roof: Factory painted kliplok roof sheets
- Doors & Windows: As per the architects Doors and window schedule drawing (1214/WD/051)

### d) General store

- Walls: Face brick finish, roller course at lintol level
- Roof: Factory painted kliplok roof sheets
- Doors & Windows: As per the architects Doors and window schedule drawing (1214/WD/056)

### e) Technical service centre

- Walls: Face brick finish, roller course at lintol level and stretcher bond at FFL
- Roof: Factory painted kliplok roof sheets
- Doors & Windows: As per the architects Doors (1214/WD/041) & (1214/WD/042) and window (1214/WD/040) schedule drawing

### f) Guard hut

- Walls: Face brick finish, roller course at lintol level and stretcher bond at FFL

- Roof: Factory painted kliplok roof sheets
- Doors & Windows: As per the architects Doors and window schedule drawing (1214/WD/053)

g) Ladder rack

- Walls: N/A
- Roof & Cladding: Factory painted kliplok roof sheets
- General: The Ladder rack to be as per Engineers steel stanchion structure specifications

h) Wash bay

- Walls: N/A
- Roof & Cladding: Factory painted kliplok roof sheets
- General: The wash bay to be as per Engineers steel structure specifications

i) Covered parking & Truck bays

- Walls: N/A
- Roof & Cladding: Factory painted kliplok roof sheets
- General: To be as per Engineers steel structure specifications (1214/WD/006)

j) Refuse

- Walls: Face brick finish, roller course at lintol level
- Roof: Factory painted kliplok roof sheets
- Doors & Windows: As per the architects Doors and window schedule drawing (1214/WD/056)

### **4.3 Internal Finishes**

a) Accommodation

- Floors: Vinyl sheets on 75 mm concrete surface bed; refer to the Finish schedule (1214/WD/082) for full specification.
- Walls: Smooth Plaster & paint to all internal brick walls. Ceramic wall tiles at the kitchen and bathrooms; refer to the Finish schedule (1214/WD/082) for full specification.
- Joinery fittings: Built-in-cupboards, counters & Worktops
- Ceilings: Fibre cement nailed up ceiling on Insulation & Sisalation; refer to the Finish schedule (1214/WD/082) for full specification.
- Skirting and trims: Vinyl skirting (1214/WD/082) for full specification
- Doors & Windows: As per the architects Doors and window schedule drawing (1214/WD/079) & (1214/WD/078)
- Fire doors, frames and ironmongery: to be of industrial quality and able to withstand heavy traffic.

#### b) Customer Service Centre

- Floors: Vinyl sheets on 75 mm concrete surface bed; refer to the Finish schedule (1214/WD/021) for full specification.
- Walls: Plaster & Paint to all internal brick walls. Ceramic wall tiles at the kitchen and bathrooms; refer to the Finish schedule (1214/WD/021) for full specification.
- Joinery fittings: Built-in-cupboards, counters & Worktops
- Ceilings: Vinyl clad ceiling tiles on Insulation & Sisalation; refer to the Finish schedule (1214/WD/021) for full specification.
- Skirting and trims: Vinyl skirting FloorworX Extruda (1214/WD/021) for full specification
- Doors & Windows: As per the architects Doors and window schedule drawing (1214/WD/017)
- Fire doors, frames and ironmongery: to be of industrial quality and able to withstand heavy traffic.

#### c) Equipment store

- Floors: Sponge-rolled concrete finish on 75mm concrete surface bed. Epoxy floor paint on Storeman's office, stores, workshop & chemical store. Refer to the Finish schedule (1214/WD/052) for full specification.
- Walls: Plaster & Paint to all internal brick walls on Storeman's office, stores, workshop & chemical store. Facebrick finish on loading area and walkway; refer to the Finish schedule (1214/WD/052) for full specification.
- Ceilings: Vinyl clad ceiling tiles on Insulation & Sisalation; refer to the Finish schedule (1214/WD/052) for full specification.
- Doors & Windows: As per the architects Doors and window schedule drawing (1214/WD/051)

#### d) General store

- Floors: Epoxy painted sponge-rolled finish on 75 mm concrete surface bed; refer to the Finish schedule (1214/WD/057) for full specification.
- Walls: Facebrick on all internal walls; refer to Finish schedule (1214/WD/057)
- Side cladding: Factory painted kliplok roof sheets; refer to the Finish schedule (1214/WD/057)

#### e) Technical service centre

- Floors: Vinyl sheets on 75 mm concrete surface bed; refer to the Finish schedule (1214/WD/046) for full specification.
- Walls: Plaster & Paint to all internal brick walls; refer to the Finish schedule (1214/WD/046) for full specification.
- Ceilings: Fibre cement nailed up ceiling on Insulation & Sisalation; refer to the Finish schedule (1214/WD/046) for full specification.
- Skirting: Vinyl skirting (1214/WD/046) for full specification

f) Guardhouse

- Floors: Vinyl sheets on 75 mm concrete surface bed; refer to the Finish schedule (1214/WD/054) for full specification.
- Walls: Plaster & Paint to all internal brick walls; refer to the Finish schedule (1214/WD/054) for full specification.
- Ceilings: Gypsum ceiling boards on Insulation & Sisalation; refer to the Finish schedule (1214/WD/053) for full specification.
- Skirting and trims: Vinyl skirting FloorworX Extruda (1214/WD/053) for full specification

#### **4.4 Sanitaryware**

- WC – Vaal hibiscus 90° close coupled pan, vaal Protea paraplegic pan.
- Urinal – Vaal Lavatera sanitary urinal
- Whb – Vaal lamingo
- Taps – Cobra taps as per sanitary schedule

A fully complaint disabled bathroom has been indicated on the ground floor in the administration block within close proximity to all areas. This facility will be completely fitted out with all grab rails, emergency alarm features and signage to comply with SANS 10400.

## 5. CIVIL ENGINEERING SERVICES

The detailed calculation of Civil Engineering Services is provided in the following section.

### 5.1. Platforms

Platforms would be required for the construction of the buildings but no major excavation will be needed nor be there any retaining walls for the proposed area.

### 5.2. Water Supply

#### 5.2.1. Daily Domestic Water Demand

**Table 2: Specifications for Daily Domestic Water Demand**

Standard	Unit	Specification	
		Red Book	SANS 10252
Boarding school/Hostels	Litres / Occupant	150	200 - 250
Government and Municipal/ Offices	Litres / 100m <sup>2</sup>	400	100 - 150

In addition to the above, a wash bay would be provided on site and the recommended design flow at the wash bay is 2.0 litres/second.

The Red Book provides slightly more conservative values and hence has been selected as the preferred standards for the design of the water supply for the development. In addition, it has been assumed that the Wash Bay would be used for a maximum of 50 minutes per day and at a flow rate of 2.0 litres/second. The daily water demand for the wash bay would be 6,000 litres.

Table 3 provides details of the Average Daily Water Demand for the Lusikisiki Eskom Customer Network Centre.

**Table 3: Specifications for Daily Domestic Water Demand**

Item No	Description	Unit	Quantity	Demand Litres/unit/day	Total
1	Guard house	Occupant	1	150	150
2	Customer Service Centre	100m <sup>2</sup>	0.7	400	280
3	Technical Service Centre	100m <sup>2</sup>	4.5	400	1,800
4	Accommodation	Occupant	8	250	2000
5	Equipment store	100m <sup>2</sup>	1.4	400	560
6	Wash Bay	Sum	1	6,000	6,000
7	<b>Total Daily Demand</b>				<b>10 790</b>
8	<b>Losses</b>	%	<b>10</b>		<b>1 079</b>
9	<b>TOTAL</b>				<b>9 711</b>

The total daily water demand for the full development is therefore 9,711 litres and the minimum required working pressure at the building of 100kPa or 10 metres.



### 5.2.2. Fire Fighting Water Demand

Water demand for firefighting is calculated based on a Fire-risk Category as described in the “Red Book”.

The “Red Book” defines the development in Lusikisiki as a Low Risk - Group 1 and the required minimum design fire flow of 900 litres/minute for one hydrant on site or in the street. The design duration of the fire flow would be 2 hours and the total water demand for the fire flow would therefore be 108,000 litres. The minimum residual head required by the “Red Book” for fire flow in a Low Risk - Group 1 area is 7m.

$$900\text{l/min} \times 60\text{min} \times 2\text{hrs} = 108,000 \text{ litres}$$

SANS 10252 provides a specification for fire flow where the minimum pressure required pressure is 300kPa with a flow rate of 1,200 litres/minute per hydrant and 30 litres/minute per hose reel. The design demand has been determined based one hydrant and three fire hose reels discharging simultaneously. The total flow rate would therefore be 1,290 litres per minute and assuming the Red Book duration of 2 hours the total daily water demand for fire flow would be 154,800 litres.

$$1,290\text{l/min} \times 60\text{min} \times 2\text{hrs} = 154,800 \text{ litres}$$

### 5.2.3. Total Daily Water Demand and Peak Flow

Table 4 provides the total Daily Water Demand for Domestic and Fire Flow as well as details of the Peak Daily Flow. The recommended Peak Factor for the Domestic Water is 3.5 and the fire storage would be recharged over a period of one day.

**Table 4: Calculation of Total Daily Water Demand**

No	Description	Total Area	Average Daily Water Demand (litres)
1	Total Daily Water Demand	Litres	9711
2	Peak Factor		3.5
3	<b>TOTAL PEAK FLOW</b>	<b>Litres/second</b>	<b>0.393</b>

The peak flow rate for the domestic water would be 0.39 litres per second for the full development.

It is also important to note that the fire flow would not be required on a daily basis and where on-site storage is required in terms of the DPW standards, the high-level tank could fill up over a full day. It is also recommended that a separate fire main be provided for the development and that this no be combined with the domestic water supply.

#### **5.2.4. Bulk Water Connection**

The total daily demand would be 9,669 litres.

The required reservoir storage volumes are as follows:

- Domestic Water – 48 hours – 19,338 litres.
- Fire Water Storage – 154,800 litres and it is recommended that a high-level tank be provided for this storage. The final position of the tank would be determined during the detailed design phase of the project.

The high level tank will be partitioned so that it can store both domestic water and firefighting water also.

### **5.3. Sanitation**

#### **5.3.1. Daily Sewage Demand**

The average daily sewage volume that would be discharged from the Eskom Technical Service Centre would be 90% of the domestic water demand. The domestic water demand was estimated to be 9,711 litres/day and the sewage volume would therefore be 8,793.9 litres/day.

#### **5.3.2. Grease Trap**

The development would include a Wash Bay as well as drainage from a pole yard. The discharge from these areas was designed in accordance with SANS 50858 and in terms of the regulations it would not be possible to discharge the outflow from these areas to the Stormwater Drainage system.

The required configuration of the Grease Trap in terms of SANS 50858-1 Annexure B – Table B.2 is as follows:

- Sludge trap
- Class II Separator
- Sampling Shaft

The outflow for the Grease Trap would then discharge to the sewage reticulation. The sludge trap was designed to have a total minimum storage volume of 800 litres and the Class II Separator was designed for a total minimum volume of 6 m<sup>3</sup>. In addition, the specification for the minimum depth of water in the separator is 2.5 metres and hence the required surface area of 2.4 m<sup>2</sup>. Drawing S172452-GEN-01 provides a layout of the Grease Trap.

The Car Wash Bay is not located at the Pole Yard and hence a second sludge trap has been provided at the Car Wash Bay. The discharge from this sludge trap would link into the main grease trap at the pole yard and the discharge from the grease trap would link into the sewage reticulation.

### **5.3.3. Sewage Reticulation**

The sewage reticulation would be designed based on the flows above and with the following criteria:

- Minimum pipe diameter for reticulation – 150mm steel pipe under the road areas.
- Minimum pipe diameter for reticulation – 110mm
- Minimum full bore velocity of flow – 0.7 m/sec
- Minimum gradient of 110mm diameter pipe – 1:120
- Minimum gradient of 160mm diameter pipe – 1:200
- Manholes would be provided at a maximum spacing of 60 metres
- Anchor blocks would be provided for all sewers that have a gradient of more than 10%.

### **5.3.4. Sewage Connection**

The new proposed Eskom CNC position in Lusikisiki does not have a water borne sewage reticulation system and therefore the Customer Network Centre would provide a septic tank and soakaway system for sewer. The conservancy tank would have to be de-sludged periodically.

### **5.3.5. Stormwater Drainage**

The stormwater from the site currently drains from the south eastern corner of the site towards the north western corner of the site. All the new roads would be constructed to accommodate stormwater runoff.

All stormwater will be piped into detentions ponds, this water will then be reused for irrigation purposes. The detention ponds have been designed to retain the 1:50 year rainfall, any water in excess of the 1:50 year rainfall will drain out of the towards the north east corner of the site.

The proposal is to provide one detention pond as indicated on Drawing S172452-SDT-01. The Detention Ponds were sized using the rational formula as follows:

- 1 in 50 year rainfall – 150mm / hour
- Weighted run-off coefficient for site – 0.8
- Time of concentration – 15 minutes
- Recommended Detention Pond Size: 184 m<sup>3</sup>

The overflow from the detention ponds would be discharged to the surface as no existing stormwater drains are available in close proximity to the site.

It would be possible to install a submersible pump into the detention pond in order to irrigate the landscaped areas of the site. This scope of work was not included in the general Civil Engineering works and hence no details have been provided.

The stormwater drainage network was designed in accordance with the following criteria:

- Minimum pipe diameter for reticulation – 300mm
- Minimum full bore velocity of flow – 0.9 m/sec
- Minimum gradient of 300mm diameter pipe – 1:150
- Minimum gradient of 450mm diameter pipe – 1:200
- Manholes would be provided at a maximum spacing of 60 metres

- Anchor blocks would be provided for all sewers that have a gradient of more than 10%.

### **5.3.6. Roads and Parking**

There are currently no existing roads on the site. The proposed site will have an entrance on the western side of the site where trucks and motor vehicles will be able to enter and exit. There will also be an entrance/exit on the northern boundary of the site to allow bigger trucks to enter and exit safely without having too much of an impact on customers.

All radii of the roads have been designed to allow the trucks to move safely without experiencing any difficulties due to turning etc. All roads have been designed in accordance with the red book and Standard Specifications in terms of COLTO.

The specification for the roads would be as follows:

- Interlocking Paving Roads:
  - Sub-grade - 150mm G7 material compacted to 95% of modified AASHTO density,
  - Sub-base - 150mm G5 material compacted to 98% of modified AASHTO density,
  - Base Course - 125mm G2 crushed stone base compacted to 85% of relative density.
  - Surface - 80mm 30MPa interlocking paving block laid on 25mm crusher dust.
- Concrete Road:
  - Sub-grade - 150mm G5 material compacted to 95% of modified AASHTO density,
  - Sub-base - 150mm G5 material compacted to 98% of modified AASHTO density,
  - Surface – 225mm 25 MPa Concrete with construction joints.

All road edges will be constructed with a Fig 3 Edge kerb on each side.

### **5.3.7. Earthworks**

The existing site falls from the south eastern corner of the site towards the north western corner of the site at an average gradient of 7%. The requirement for the development was for an even grade over the site so as to limit the number of ramps and steps. It would not be possible to develop the site without the construction of platforms.

The following volumes were determined for the designed platforms:

- Strip topsoil to depth of 400mm over the entire site (1.2Ha). Material to be cut and spoiled.
- Rip and compact in-situ material to 93% MOD
- 900 m<sup>3</sup> of Cut to Spoil.
- 8900m<sup>3</sup> Import to Fill compacted to 95% MOD (G7 type material)
- 150mm imported G5 placed and compacted to 98% MOD over the entire platform (1640 m<sup>3</sup>)

Please note that values given above are not exact and are subject to change on site because of site conditions.

Drawings S172453-PL-01, S172453-RDL-01. Were issued for the construction of the platforms.

## **6. STRUCTUREAL ENGINEERING SERVICES**

SANS10160-1:2011 requires a design working life of the building to be 50 years. The structural elements would be designed in terms of the Ultimate Limit State and Serviceability Limit State as required in SANS10160-1:2011.

Table 5 provides the load combinations that were considered applicable for the design of the structural elements and are as provided in SANS10160-1:2011.

**Table 5: Load Combinations for Design of the Structural Elements for Ultimate Limit State Design**

Item No	Description	Formulae
1	Combination 1	$1.5 \times \text{Dead Load}$
2	Combination 2	$1.2 \times \text{Dead Load} + 1.6 \times \text{Live Load}$
3	Combination 3	$0.9 \times \text{Dead Load} + 1.3 \times \text{Wind Load}$

Load Combination 3 would only be applicable for the design of the roof elements or support structures for the roof elements. The structural elements would be designed based on all three load combinations and elements specified such that they would be capable of withstanding any of the above load combinations.

Table 6 provides the load combinations that were considered applicable for the design of the structural elements and are as provided in SANS10160-1:2011.

**Table 6: Load Combinations for Design of the Structural Elements for Serviceable Limit State Design**

Item No	Description	Formulae
1	Combination 1	$1.1 \times \text{Dead Load}$
2	Combination 2	$1.1 \times \text{Dead Load} + 1.0 \times \text{Live Load}$
3	Combination 3	$1.1 \times \text{Dead Load} + 1.1 \times \text{live} + 0.6 \times \text{Wind Load}$

The structural elements would be designed based on all three load combinations and elements specified such that they would be capable of withstanding any of the above load combinations.

## 6.1. Foundations

All Geotechnical investigations were done by AGES Omega (Pty) Ltd. No competent horizon was identified during the geotechnical site investigation at a depth less than 3.0mbgl. DCP testing indicated a potential competent layer at approximately 3.6 mbgl but further testing will be required to confirm.

Recommendations for all single storey buildings is to remove and spoil upper fill / spoil and hillwash materials and import material. All foundations to be **Raft type** foundations.

Deep foundations would have to be in excess of 3.6mbgl depending on site inspection of trenches.

Pile foundations were not recommended and would need further investigation on what depth piles would be required with different type of machinery used than the excavator TLB that was used on this investigation.

## 6.2. Structural Engineering Elements

The architect has provided a copy of the Approved Site Development Plan and also plans for each of the individual buildings. These plans have been used for the design of the structural elements. . The structural elements are as follows:

- Wash Bay:
  - Steel portal frame
- Ladder rack:
  - Steel portal frame
- Equipment Store:
  - Steel canopy to verandah
- General store:
  - Steel portal frame
  - Steel canopy to verandah
- Technical service centre:
  - Steel structure for entrance and front façade
  - Concrete roof slab on top of the steel structure
- Customer service centre:
  - Steel structure for entrance and front façade
  - Reinforced concrete beam at entrance
  - Reinforced concrete strong room slab
- Accommodation
  - Steel canopy to verandah with concrete roof slab

### 6.2.1. Reinforced Concrete Frame

The reinforced frames structure would be designed in accordance with SANS 10100-1:2000, Part 1 – The Structural Use of Concrete – Design.

### 6.2.2. Brickwork

The reinforced frames structure would be designed in accordance with SANS 10164-1:1980, Part 1 – The Structural Use of Masonry – unreinforced masonry walls.

### 6.2.3. Structural Steel Roof Structure

The structural steel framed structure would be designed in accordance with SANS 10162-1:2005, The Structural Use of Steel.

### 6.2.4. Timber Roof Structure

The design of the Timber Roof structure would be undertaken by specialists and would not form part of the scope of work for Sinakho Consulting.

## 7. ELECTRICAL ENGINEERING SERVICES

### a) Bulk power supply

The bulk power supply to the proposed site, in Lusikisiki, will be supplied by Eskom.

### b) Power demand

The maximum power demand of the developments is calculated at 100 kVA each.

50 kVA Emergency Power, supplied by an outdoor sound attenuated Stand-by diesel Generator.

20 kVA Essential Power, supplied by a 3-phase Uninterruptable Power Supply (UPS) unit

### c) Equipment specifications

- Electrical equipment specifications for Power and Lighting are stated within the Electrical Specifications and schedule documentation.

### d) Small power

- **New Technical Services Centre:** Wall mounted flush SANS 164-1 & 2 switched socket outlets for normal and dedicated power supply have been allocated. Power skirting mounted Standard (white) switched socket outlets for Normal Supply, Euro socket outlet (SANS 164-2), Dedicated (red) for Emergency Supply and UPS (blue) for Essential switched socket outlet will be utilised. Data points within the power skirting have been allocated for the building. UPS switched socket outlets within the ceiling void for Projector points and for Access Control magnetic locks have been provided. Outdoor air-conditioning units will be supplied via water tight double-pole outdoor isolators, whilst 6 ampere unswitched socket outlets, on normal supply, will supply the fans for the air-conditioning indoor units. These power points will be fed from a floor standing Main Distribution Board (MDB-TSC) located within the building.
- **New Customer Services Centre:** Wall mounted flush SANS 164-1 & 2 switched socket outlets for normal and dedicated power supply have been allocated. Power skirting mounted Standard (white) switched socket outlets for Normal Supply, Euro socket outlet (SANS 164-2), Dedicated (red) for Emergency Supply and UPS (blue) for Essential switched socket outlet will be utilised. Data points within the power skirting have been allocated for the building. UPS switched socket outlets within the ceiling void for Access Control magnetic lock have been provided. Outdoor air-conditioning unit will be supplied via water tight double-pole outdoor isolator, whilst 6

ampere unswitched socket outlet, on normal supply, will supply the fans for the air-conditioning indoor unit. These power points will be fed from a semi-recessed mounted Distribution Board (SDB-CSC) located within the building.

- **New Equipment Store:** Wall mounted flush SANS 164-1 & 2 switched socket outlets for normal and dedicated power supply have been allocated. Power skirting mounted Standard (white) switched socket outlets for Normal Supply, Euro socket outlet (SANS 164-2), Dedicated (red) for Emergency Supply and UPS (blue) for Essential switched socket outlet will be utilised. Data points within the power skirting have been allocated for the building. UPS switched socket outlets within the ceiling void for Access Control magnetic lock have been provided. Outdoor air-conditioning unit will be supplied via water tight double-pole outdoor isolator. These power points will be fed from a semi-recessed mounted Distribution Board (SDB-ES) located within the building.
- **New General Store:** Wall mounted flush SANS 164-1 & 2 switched socket outlets for normal and dedicated power supply have been allocated. UPS switched socket outlet at high level for Access Control magnetic lock have been provided. These power points will be fed from a surface mounted Distribution Board (SDB-GS) located within the building.
- **New Guard House:** Wall mounted flush SANS 164-1 & 2 switched socket outlets for normal and dedicated power supply have been allocated. Power skirting mounted Standard (white) switched socket outlets for Normal Supply, Euro socket outlet (SANS 164-2), Dedicated (red) for Emergency Supply and UPS (blue) for Essential switched socket outlet will be utilised. Data points within the power skirting have been allocated for the building. UPS switched socket outlets within the ceiling void for Access Control magnetic lock have been provided. These power points will be fed from a semi-recessed mounted Distribution Board (SDB-GH) located within the building.
- **New Stand-by Accommodation:** Wall mounted flush SANS 164-1 & 2 switched socket outlets (with Euro socket outlet – SANS 164-2) for normal power supply have been allocated. These power points will be fed from a semi-recessed mounted Distribution Board (SDB-SA) located within the building.
- **New Wash Bay:** Surface mounted weather proof outdoor mounted switched socket outlets have been provided for this area. These will be fed from an outdoor surface mounted weather proof Distribution Board (SDB-WB).
- **New Ladder Rack:** No allocation for power has been made for this building.

#### e) Lighting

- **New Technical Services Centre:** Due to the 600mm x 600mm suspended ceiling design, the type of luminaires used in the offices will be a 600mm x 600mm recessed slim line 46W LED. In conjunction with the recessed 600mm x 600mm luminaires, there shall be 10W LED recessed dimmable downlighters within the boardroom. 40W LED surface mounted open channel luminaires shall be installed within the strong room and accompanied by a 10W LED decorative indicator (Red coloured lens) luminaire on the external wall of the strong room. 28W LED recessed non-dimmable downlighters shall be provided within the ablutions. 30W LED outdoor



decorative bulkhead luminaires shall be provided within the shower and change room areas, as well as on the external walls of the building. The calculation complied as to achieve a luminous density (Lux) of 350lx minimum for the office spaces. A minimum lux of 150lx for the passages and 150lx for the kitchen, change rooms and ablutions. All luminaires shall have Cool White LED modules for offices and Warm White LED modules for public spaces. All internal luminaires are controlled by ceiling mounted occupancy sensors and all external luminaires shall be controlled by photocell (day/night sensor switch).

- **New Customer Services Centre:** 600mm x 600mm recessed slim line 46W LED luminaires shall be installed within the Customer Services Centre and kitchen. 28W LED recessed non-dimmable downlighters shall be provided within the ablutions. 30W LED outdoor decorative bulkhead luminaires shall be provided on the external walls of the building. All luminaires shall have Cool White LED modules and Warm White LED modules for public spaces. All internal luminaires are controlled by ceiling mounted occupancy sensors and all external luminaires shall be controlled by photocell (day/night sensor switch).
- **New Equipment Store:** The Store Manager's office, within this building, has been designed with a gypsum board ceiling, therefore 600mm x 600mm surface mounted slim line 46W LED luminaires shall be utilised. 40W LED surface mounted open channel luminaires shall be installed within store and workshop areas. 32W LED surface mounted vapour proof luminaires will be installed within the chemical store and fumigation room. These luminaires will also be installed undercover veranda. 30W LED outdoor decorative bulkhead luminaires shall be provided on the external walls of the building. All luminaires shall have Cool White LED modules and Warm White LED modules for public spaces. All internal luminaires are controlled by ceiling mounted occupancy sensors and all external luminaires shall be controlled by photocell (day/night sensor switch).
- **New General Store:** 40W LED surface mounted open channel luminaires shall be installed within the general store. 32W LED surface mounted vapour proof luminaires will be installed undercover veranda. 20W LED outdoor decorative bulkhead luminaires shall be provided on the external walls of the building. All luminaires shall have Cool White LED modules and Warm White LED modules for public spaces. All internal luminaires are controlled by ceiling mounted occupancy sensors and all external luminaires shall be controlled by photocell (day/night sensor switch).
- **New Guard House:** The Guard House has been designed with a gypsum board ceiling, therefore 600mm x 600mm surface mounted slim line 46W LED luminaires shall be utilised. 30W LED outdoor decorative bulkhead luminaires shall be provided within the ablution and on the external walls of the building. All luminaires shall have Cool White LED modules and Warm White LED modules for public spaces. All internal luminaires are controlled by ceiling mounted occupancy sensors and all external luminaires shall be controlled by photocell (day/night sensor switch).
- **New Standby Accommodation:** The ceiling has been designed with a gypsum board ceiling, therefore 600mm x 600mm surface mounted slim line 46W LED luminaires shall be utilised within the recreation and dining areas. 32W LED surface mounted vapour proof luminaire will be installed within the kitchen (cooking) area. 30W LED outdoor decorative bulkhead luminaires shall be provided within the bedrooms, ablutions and on the external walls of the building. All luminaires shall have Cool White LED modules. All internal luminaires are controlled by ceiling

mounted occupancy sensors, except for the bedroom luminaires, those will be controlled by a flush mounted light switch, and all external luminaires shall be controlled by photocell (day/night sensor switch).

- **New Wash Bay:** 32W LED surface mounted vapour proof luminaires will be installed within the wash bay area. These luminaires shall be controlled via a weatherproof rotary switch located onto the outdoor surface mounted distribution board. All luminaires shall have Cool White LED modules and Warm White LED modules for public spaces.
- **New Ladder Rack:** 32W LED surface mounted vapour proof luminaires will be installed, controlled via a photocell mounted onto the outdoor electrical distribution kiosk. This electrical distribution kiosk supplies and controls the outdoor perimeter lighting. All luminaires shall have Cool White LED modules and Warm White LED modules for public spaces.
- **Area and Car Park Lighting:** External lighting will be provided via 50W LED flood lights luminaire mounted on a 6m glass fibre pole for the open spaces. The covered car park areas will utilise 32W LED surface mounted vapour proof luminaires. These lights will be controlled by various photocells (day/night sensor switch), located on various electrical distribution kiosks within the site.

#### f) Access control

The electrical design allows for access control infrastructure only; which includes conduits within walls, with draw wires and draw boxes only. Access Control devices did not form part of the scope.

#### g) Telephone & data

Eskom utilises voice over internet protocol (VoIP) for their telephony requirements, therefore the electrical design allows for data cabling (containment) infrastructure which includes conduits and draw boxes within walls (with draw wires) and wire mesh cable trays within ceiling voids. Also, CAT6 data wall and power skirting mounted modules shall be provided, however cabling shall not.

#### h) Lightning protection

The electrical design made provisions for a lightening protection system (LPS), which will be designed, supplied and installed by an accredited specialist LPS designer and installer.

## 8. MECHANICAL ENGINEERING SERVICES

#### a) Equipment specifications

- Mechanical equipment specifications for Air-conditioning & Ventilation, Fire Protection and Domestic Water for site, Lusikisiki, is stated within the Mechanical Specifications and schedule documentation.

#### b) Air-conditioning and Ventilation

- **New Technical Services:** This building will be air-conditioning by two types of

air-conditioning split system, ceiling cassette and mid-wall split heat pump inverter units. The ceiling cassette indoor unit (air handling) will be recessed in ceiling and hanged from roof trusses and will be utilized in Offices and Boardroom. The mid-wall indoor unit (air handling) will be surface mounted on the internal wall and will be utilized in Server Room only. The outdoor units (evaporator) will be fixed on galvanized steel cantilever bracket bolted on the external wall with masonry Hilti bolts at high level. The condensate drain pipe from the split units will be terminated into a nearest drain point provided by the Plumbing Contractor or into the gully.

The ventilation system will be installed at the Archive, Kitchen and Ablutions. The ablutions will utilize the ceiling diffusers, galvanized ducting, in-line extraction fan, sound attenuator and weather louvre. The kitchen will utilize ceiling mounted extractor fan discharging in ceiling void. The archive will utilize wall mounted extractor fan discharging externally. The door grilles will be installed at the ablution and kitchen to improve cross ventilation in the room. Both systems, air-conditioning and ventilation, will comply in accordance with SANS 10400 Part O.

- **New Customer Services Centre:** The offices in this building will be air-conditioning by means of ceiling cassette split heat pump inverter units. The indoor unit (air handling) will be recessed in ceiling and hanged from roof trusses. The outdoor unit (evaporator) will be fixed on galvanized steel cantilever bracket bolted on the external wall with masonry hilti bolts at high level. The condensate drain pipe from the split units will be terminated into a nearest drain point provided by the Plumbing Contractor or into the gully.

The ventilation system will be installed at the kitchen and ablutions. The ablutions will utilize the ceiling diffusers, galvanized ducting, in-line extraction fan, sound attenuator and weather louvre. The kitchen will utilize ceiling mounted extractor fan discharging in ceiling void. The door grilles will be installed at the ablution and kitchen to improve cross ventilation in the room. Both systems, air-conditioning and ventilation, will comply in accordance with SANS 10400 Part O.

- **New Equipment Store:** The only office in this building will be air-conditioning by a mid-wall split heat pump inverter unit. The indoor unit (air handling) will be surface mounted on the internal wall at high level. The outdoor unit (evaporator) will be fixed on galvanized steel cantilever bracket bolted on the external wall with masonry hilti bolts at high level. The condensate drain pipe from the split unit will be terminated into a nearest drain point provided by the Plumbing Contractor or into the gully.

The ventilation system will be installed at the Fumigation and Chemical Stores. The stores will utilize wall mounted extractor fan discharging externally with galvanized cowl and bird screen or wire mesh. The doors will be installed with louvres to improve cross ventilation in the room. Both systems, air-conditioning and ventilation, will comply in accordance with SANS 10400 Part O.

- **New General Store:** This building will be ventilated by roof ridge ventilators mounted on the roof ridge of the building. The store will equip with wall mounted air vent to improve cross ventilation in the room. The temperature difference between the inside and outside of the store cause pressure variation resulting in air movement through openings inside the roof ridge ventilator. The roof ventilator will provide a minimum of 3% opening to comply with SANS 10400, Part 4.42.1.

c) Fire Protection

- **New Technical Services:** This building will be provided with an internal fire hose reel, 30m and portable fire extinguishers to protect the building structure. The 30m fire hose reel will be located at Open Plan Office area. The type and size of portable fire extinguishers to be used are, namely: 4.5kg Dry Chemical Powder (DCP) and 5.0kg Carbon Dioxide (CO<sub>2</sub>) which are effective on Class A, B and C fires. The fire extinguisher will be mounted on wall with backing board, hook and signage indicating the location of fire extinguisher and fire hose reel. The water reticulation for fire hose reel will connect to the Civil Engineer's fire ring main.
- **New Customer Services Centre:** This building will be provided with portable fire extinguishers to protect the building structure. The type and size of portable fire extinguishers to be used are, namely: 4.5kg Dry Chemical Powder (DCP) only which is effective on Class A, B and C fires. The fire extinguisher will be mounted on wall with backing board, hook and signage indicating the location of fire extinguisher.
- **New Equipment Store:** This building will be provided with portable fire extinguishers to protect the building structure. The type and size of portable fire extinguishers to be used are, namely: 4.5kg Dry Chemical Powder (DCP) and 5.0kg Carbon Dioxide (CO<sub>2</sub>) which are effective on Class A, B and C fires. The fire extinguisher will be mounted on wall with backing board, hook and signage indicating the location of fire extinguisher.
- **New General Store:** This building will be provided with portable fire extinguishers to protect the building structure. The type and size of portable fire extinguishers to be used are namely, 4.5kg Dry Chemical Powder (DCP) and 5.0kg Carbon Dioxide (CO<sub>2</sub>) which are effective on Class A, B and C fires. The fire extinguisher will be mounted on wall with backing board, hook and signage indicating the location of fire extinguisher.
- **New Guard House:** This building will be provided with portable fire extinguisher to protect the building structure. The type and size of portable fire extinguisher to be used is, namely: 4.5kg Dry Chemical Powder (DCP) only which is effective on Class A, B and C fires. The fire extinguisher will be mounted on wall with backing board, hook and signage indicating the location of fire extinguisher.

d) Domestic Water Installation

- The domestic water installation will cater for the internal reticulation of hot and cold water to New Technical Services, New Customer Centre, New Guard House and Wash Bay Area. The domestic water reticulation will be connected to domestic water ring main designed by the Civil Engineers.
- The staff kitchen / kitchen at New Technical Services, New Customer Centre and New Guard House will be provided with hot water and water coolers. For hot water installation, two systems will be used, namely:-
  - Under-counter geyser with 10 L water capacity connected to sink taps and
  - Stand-alone above-sink 5L hydro-boil.
- The water cooler will be connected to a stand-alone sink tap. The type of water cooler to be installed in an under-counter type with a duty of 10 litre/hr at maximum of 12° with maximum operating pressure of 4.0 Bar (400 kPa).
- The ablution area at New Technical Services will be equipped with 2 off Solar Geyser for hot water reticulation. The type and size of solar geyser to be used is a High Pressure, Direct Solar Vacuum Tube, 250L with 2kW element as back-up for power supply.

## **9. DESIGN APPROACH AND METHODOLOGY**

### **9.1. Finalization of Scope of Works and Client's Brief**

The Design team together with the client and other stakeholders have finalized the scope of work and identified issues that were not included in the tender documents. The Design teams have finalized the site and compose a Project Brief.

### **9.2. Research\investigations**

The following investigation and research have taken place:

- a) Land survey: As outlined above
- b) Geotechnical investigations: As outlined below
- c) Environmental assessment

An Environmental assessment does not need to undertake.

- d) Architectural precedence studies

The Architect undertook precedence studies of similar Contact centres constructed at various CNC sites. The reason for the study will be to investigate issues that were encountered and solutions used by other designers.

### **9.3. Concept designs and design report**

The architectural team in consultation with the Client and Client's agent developed a concept of the building to be constructed. The concept was used as the basis for the preliminary design for engineering services (water, sanitation, roads and storm-water, electricity, mechanical components).

### **9.4. Preliminary cost estimate**

The Quantity Surveyors carried out a preliminary cost estimate to determine the order of magnitude of the cost of the structure.

### **9.5. Detailed design and drawings**

Once the preliminary cost estimates were approved, the consultants proceeded to the detailed design stage of their respective fields.

It is expected that the outcome of the detailed design stage will be:

- Architectural drawings and specifications
- Civil engineering drawings and specifications for water, sewer, roads (Incl. Parking) and storm-water.
- Structural engineering drawings and specifications for structural elements such as foundations, slabs, stairs, masonry, columns, beams, roof etc.
- Detailed mechanical /electrical design.
- Detailed cost estimate and cost advice.
- Tender documentation.

## 9.6. Bill of Quantities

The Quantity Surveyor is responsible for the production of the Bills of Quantities which will be used for procurement of contractors.

## 9.7. Tender period and adjudication

The PA, Design team and Project Managers will determine the tender period and adjudication processes that will be followed will be determined by CNC.

## 9.8. Contract award and site handover

The PA, Design team and Project Managers will determine procedures to be followed during contract award and site hand-over.

## 9.9. Contract administration

During the implementation phase, the following control mechanisms will be utilized:

- health and safety audits
- certification of works
- budget control
- quality control
- progress meetings
- technical meetings

## 9.10. First delivery and de-snagging

On completion of construction or as various components of the structure are completed and are at a stage of "Practical Completion – i.e. can be useful to the client, each discipline, overseen and coordinated by the principal agent, will verify the completion of their various components and carry out a commissioning exercise.

For most components of the work, undertaken by the main contractor, practical completion or 1<sup>st</sup> delivery will take the form of snags and the contractor will be issued with a certificate detailing the snags and the date of completion of such.

## 9.11. Final completion

Once all the snags have been rectified to the satisfaction of the relevant professionals and the Client, the contractor will be issued with a completion certificate. The date of issue will be the beginning of the defects liability period to be specified by the Client at tender stage.

During this period, the principal agent will note all defects attributable to workmanship and instruct the contractor to rectify these within a determined period. Should the contractor not comply, the Client reserves the right to rectify the defects at the contractor's cost using retention monies or guarantees withheld.

#### 9.12. Final account

The final account will be carried out by the Quantity Surveyor.

#### 9.13. Closeout report

A Closeout report will be prepared by the PA and consultants.

### **10. DESIGN REQUIREMENTS**

- 10.1. The CNC presents the design team with a unique opportunity to make a significant contribution to the design of a building which marks Eskom's commitment to the provision of high-quality of contact centres buildings.
- 10.2. It will be one of the landmark contact centres; therefore the building should have a resonance of durability and sustainability, and civic importance.
- 10.3. The building should be accessible to all; therefore it will be necessary to investigate the movement of pedestrians, traffic (private, public, delivery vehicles) and disabled users. The intention should be for people with disabilities to be able to access and use the building and site with minimum assistance.
- 10.4. The building must reflect the opposing requirements of openness and security, and this will be the measure of the success of the design if this can be achieved unobtrusively.
- 10.5. The CNC centre is a living, changing organisation and therefore the design must be flexible and have the capacity to accept changes in space requirement.
- 10.6. The building should be energy efficient, ensuring aspects such as natural ventilation, the connection between buildings and environmental control of each space is considered; and the building must perform well in the given environment and the design should produce a building that minimises the adverse effects on the environment.

### **11. DESIGN DESCRIPTION, CALCULATIONS AND DESIGN DATA**

#### 11.1. Civil design data and calculations

- Topographical Surveys: Co-ordinates were established and are indicated on the Site Survey Drawing.
- Geotechnical / Soil Investigations: A summary of the ground conditions are included as well as the recommended foundations to be used. These results are indicated in the geotechnical investigation below.
- Investigations on the availability and sufficiency of Municipal Services (Water, electricity, sewer): All services (water, electricity, sewerage) have been identified within and around the project site and suitable for the project

### 11.1.1. GEOTECHNICAL INVESTIGATION

AGES Omega (Pty) Ltd was appointed to conduct a geotechnical investigation at the proposed Eskom CNC depot in the town of Lusikisiki with the aim of determining and evaluating the engineering geological characteristics of the soil and rock materials underlying the site with regard to the construction of the proposed development consisting of single storey and steel structures, roads, walkways and parking.

- The proposed depot is located approximately 500m southeast of the Lusikisiki CBD.
- The project area is largely underlain by sedimentary rocks of the Balfour Formation with a dolerite intrusion on a localised portion of the site.
- A Total of 11 test pits numbered ACN TP1 to ACN TP11 were excavated using a JCB 3CX 4X4 TLB- type excavator and profiled on the 27th of June 2017 according to the guidelines of soil and rock logging in South Africa.
- A total of 10 DCP tests were conducted in the project area. The tests were conducted adjacent to the test pits and at a depth of 1.0 mbgl at selected test pits to obtain an indication of in-situ soil compaction and stiffness.
- A total of 7 disturbed samples and 5 bulk samples were selected of the sampled materials and were submitted to a SANAS accredited laboratory in East London for analysis. Processed results are summarised and discussed in the report.
- The NHBRC Site Class designation for the project area is C2 – H1/H2 – (R)
- The following foundation recommendations are made:
  - Stiffened strip footings / stiffened or cellular raft
  - Compaction of in-situ soils below individual footings
  - Normal / Deep strip foundations
- Good site drainage and stormwater management is essential to prevent potential collapse settlement from residual dolerite material.
- It is recommended that foundation trenches be inspected during construction to ensure that any conditions that are encountered that are not discussed in this investigation can be identified and recommendations made prior to construction.

### 11.2. Structural design data and calculations

- Construction Materials: The following construction materials are proposed

Structural Element	Material	Grade
Column bases	Reinforced concrete	25MPa / 19mm
Strip footings	Reinforced concrete	25MPa / 19mm
Stub columns	Reinforced concrete	30MPa / 19mm
Surface beds	Reinforced concrete	30MPa / 19mm
Concrete columns	Reinforced concrete	30MPa / 19mm
Ground/Suspended beams	Reinforced concrete	30MPa / 19mm
Roof trusses, columns, bracing	Hot rolled Steel	S355JR
Roof purlins	Cold formed steel	Commercial Grade
Under floor material	Imported sub grade	G5
Reinforcement	High yield steel	450MPa
Reinforcement	Mild steel	250MPa



### 11.3. Designers Full Names and Designations i.e. Pr. Eng, Pr. Arch

NAME	DESIGNATION/UNIT	PROJECT ROLE
Mr. Nzondelelo Simunca	ESKOM	Client
Mr. Xabiso Sidloyi	ARCHWORXS	Principal Agent & Architect
Mr. Phila Matshaya	SETU QS	Quantity Surveyor
Mr. Oyama Mayisela	SINAKHO CONSUTLING	Structural & Civil Engineers
Mr. Mawethu Ngemntu	RNA CONSULTING	Electrical & Mechanical Engineers
M. Busakwe	GEOTECH ENGINEERS	Geological Engineers

## 12. SAFETY FACTORS ADOPTED

All designs will be done in accordance to relevant guidelines, regulations and specifications. Site work will be controlled by site supervisor and safety officer and biweekly meetings will be held where risks, progress and processes will be discussed.

## 13. NORMS AND STANDARDS USED

The following standards and regulations were used:

- SANS 10400
- SANS 10142 : latest Edition: "The Wiring of Premises : Part 1 : Low-voltage Installations",
- SANS 10142 : latest Edition: "The Wiring of Premises : Part 2 : Medium-voltage Installations",
- the Occupational Health and Safety Act, 1993 (Act 85 of 1993),
- the Local Government Act 1998 (Act 10 of 1998 (Gauteng), municipal by-laws and any special requirements of the local supply authority,
- the Fire Brigade Services Act 2000 (Act 14 of 2000),
- the National Building Regulations and Building Standards Act 1996 (Act 29 of 1996),
- the Post Office Act 1998 (Act 124 of 1998),
- the Electricity Act 1996 (Act 88 of 1996),
- the Regulations of the local Gas Board where applicable,
- the National Water Act 1998 (Act no. 36 of 1998),
- the Water Services Act 1997 (Act 108 of 1997),
- the General Authorizations (Water Act),

- the Environmental Conservation Act 1998 (Act no. 73 of 1989),
- the National Environmental Management Act 1998 (Act no. 107 of 1998) and
- The Relevant SANS publications (such as for example SANS 252 parts 1 and 2, SANS 10400, etc).

#### **14. DETAIL DESIGN DRAWINGS**

A list of detail design drawings is set out below & the drawings are included with this report.  
Refer to Annexure A.

#### **15. COST ESTIMATE**

The Quantity Surveyor's preliminary cost estimate of R 49 732 963 20 is enclosed herewith.  
Refer to Annexure B.

#### **16. PROGRAMME**

The contract period is expected not to exceed 18 months.

ARCHITECT	XABISO SIDLOYI
REGISTRATION NUMBER	SACAP 7814
SIGNATURE	

**ANNEXURE A1:**  
**ARCHWORXS DRAWING LIST**

DRAWING REGISTER & ISSUE SHEET									
Project Name		LUSIKISIKI PERMANENT CNC					REVISION AND DATE OF ISSUE		
Sheet number	Sheet name	Size	12/06/2019	23/08/2019	26/06/2019				
<b>Site Plans</b>									
A000	Site Plan	A1	B	C	C				
A001	Site Plan (Trail holes)	A1	B	B	B				
<b>Floor plans, Elevations &amp; Sections</b>									
1214-WD-002	Entrance signage Wall and Detail 2: Sliding Vehicle gate	A1	A	A					
1214-WD-003	Detail 3: Site details	A1	A	A					
1214-WD-004	Screen Wall bench and Internal Sliding gate	A1	A	A					
1214-WD-005	Refuse Bin area Slab compacting, engineering	A1	A	A	A				
1214-WD-006	Covered Parking - engineering	A1	A	A	A				
1214-WD-014	Customer Service Centre and Equipment Store decks	A1	A	A					
1214-WD-015	Dimensional plans and roof plans, Section A-A, Elevations (Customer Service Centre)	A1	A	A	A				
1214-WD-017	Window schedule Gate schedule Light shelf schedule, and Door schedule (Customer Service Centre)	A1	A	A					
1214-WD-019	Det A to Det G (Customer Service Centre)	A1	A	A					
1214-WD-020	Office Janery, Disabled Toilet & Details 1 & 2	A1	A	A					
1214-WD-021	Finishing schedule 1 (Customer Service Centre)	A1	A	A					
1214-WD-022	Finishing schedule 2 (Customer Service Centre)	A1	A	A					
1214-WD-023	Finishing schedule 3 (Customer Service Centre)	A1	A	A					
1214-WD-026	Dimensional plans and roof plans (Technical Service Centre)	A1	A	A	A				
1214-WD-028	Roof plan door and window codes plan (Technical Service Centre)	A1	A	A					
1214-WD-027	Floor finish layout plan (Technical Service Centre)	A1	A	A					
1214-WD-028	Elevations (Technical Service Centre)	A1	A	A	A				
1214-WD-029	Section A-A (Technical Service Centre)	A1	A	A	A				
1214-WD-040	Window schedule and Light shelf schedule (Technical Service Centre)	A1	A	A					
1214-WD-041	Door schedule 1 (Technical Service Centre)	A1	A	A					
1214-WD-042	Door schedule 2 and Gate schedule (Technical Service Centre)	A1	A	A					
1214-WD-043	Detail A to Detail G (Technical Service Centre)	A1	A	A					
1214-WD-044	Detail H to Detail I (Technical Service Centre)	A1	A	A					
1214-WD-045	Detail J: G.P Office 2 Janery (Technical Service Centre)	A1	A	A					
1214-WD-046	Finishing Schedule 1 (Technical Service Centre)	A1	A	A					
1214-WD-047	Finishing Schedule 2 (Technical Service Centre)	A1	A	A					
1214-WD-048	Finishing Schedule 3 (Technical Service Centre)	A1	A	A					
1214-WD-049	Dimensional plans, roof plans and Elevations (Equipment Store)	A1	A	A	A				
1214-WD-050	Section A-A, Det A to Det C (Equipment Store)	A1	A	A					
1214-WD-051	Door and Window schedule (Equipment Store)	A1	A	A					
1214-WD-052	Finish schedule (Equipment Store)	A1	A	A					
1214-WD-053	Dimensional plans, roof plans and Elevations (Guard House)	A1	A	A	A				
1214-WD-054	Finishing Schedule 1 (Guard House)	A1	A	A					
1214-WD-055	Finishing Schedule 2 (Guard House)	A1	A	A					
1214-WD-056	Dimensional plans, roof plans and Elevations (General Store)	A1	A	A	A				
1214-WD-057	Finishing Schedule (General Store)	A1	A	A					
1214-WD-058	Dimensional plans, sections and Elevations (Wash Bay)	A1	A	A	A				
1214-WD-059	Dimensional plans, roof plans and Elevations (Ladder Rack)	A1	A	A	A				
1214-WD-060	Ceiling plan (Technical Service Centre)	A1	A	A					
1214-WD-061	Ceiling plan and Janery (Guard House)	A1	A	A					
1214-WD-062		A1							
1214-WD-063	General store room shelving	A1	A	A					
1214-WD-064	Equipment store room shelving	A1	A	A					
1214-WD-065	equipment store hangers	A1	A	A					
1214-WD-066	Site signage	A1							
1214-WD-067	Customer Service Centre signage	A3	A	A					
1214-WD-068	Equipment Store signage	A1	A	A					
1214-WD-069	General Store signage	A1	A	A					
1214-WD-070	Guard House signage	A3	A	A					
1214-WD-071	Ladder Rack signage	A1	A	A					
1214-WD-072	Technical Service Centre signage	A1	A	A					
1214-WD-073	Wash Bay signage	A3	A	A					
1214-WD-074	Information plan & Generation plan (Accommodation)	A1	A	A	A				
1214-WD-075	Door & window codes plan Floor plan (Accommodation)	A1	A	A					
1214-WD-076	Floor finish layout plan (Accommodation)	A1	A	A					
1214-WD-077	Section A-A north west, north east, south west, south east elevation (Accommodation)	A1	A	A					
1214-WD-078	Window schedule Light shelf schedule (Accommodation)	A1	A	A					
1214-WD-079	Door schedule (Accommodation)	A1	A	A					
1214-WD-080	Detail A - H (Accommodation)	A1	A	A					
1214-WD-081	Detail F - M (Accommodation)	A1	A	A					
1214-WD-082	Finishing schedule 1 (Accommodation)	A1	A	A					
1214-WD-083	Finishing schedule 2 (Accommodation)	A1	A	A					
1214-WD-084	Finishing schedule 3 (Accommodation)	A1	A	A					
1214-WD-085	Corking plan (Accommodation)	A1	A	A					
<b>DISTRIBUTION AND NUMBER OF PRINTS</b>									
Client: Eskom							pdf		
Contractor:									
Electrical Engineer: RNA Consulting									
Structural and Civil Engineer: Simko Consulting									
Quantity Surveyor: Setu Quantity Surveyor									

Reason for issue: **INFORMATION**

Issued by: Kabiso Sidloyi

Issued to (Name and Signature)

Date

## ANNEXURE A2: SINAKO DRAWING LIST

Job Name:  
Job No: 5172453  
Date: 9-Oct-19  
Issue To: Archworks Architects

**SINAKHO CONSULTING**  
PROJECT DEVELOPMENT CONSULTANTS

[illegible]

ISSUED BY:	Sinakho Consulting
RECEIVED BY:	
COMPANY NAME:	
DATE:	
NO OF COPIES	3

## RNA DRAWING LIST

[illegible]

DRAWING ISSUE REGISTER

Year 1 of 1

PROJENİN ADI (ÜZERİNE)		ISSUE No BY CHK-MNT DATE ISSUED 28-Aug-19 FILE No 1913-1230																	
Project No Name Drawing No		MECHANICAL																	
Drawing Title		Year	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
MECHANICAL DRAWINGS		Issue	A	B															
1913-D-48-101 ACV	Proposed New Customer Services Centre - Air Conditioning and Ventilation Installation Layout	29-Aug-18	K2	26-Jun-18															
1913-D-48-101 DW	Proposed New Customer Services Centre - Domestic Water Installation Layout	29-Aug-18	K2	26-Jun-18															
1913-D-48-101 FF	Proposed New Customer Services Centre - Fire Protection Installation Layout	29-Aug-18	K2	26-Jun-18															
1913-D-48-102 ACV	Proposed New Equipment Store - Air Conditioning and Ventilation Installation Layout	29-Aug-18	K2	26-Jun-18															
1913-D-48-102 FF	Proposed New Equipment Store - Fire Protection Installation Layout	29-Aug-18	K2	26-Jun-18															
1913-D-48-103 ACV	Proposed New General Store - Air Conditioning and Ventilation Installation Layout	29-Aug-18	K2	26-Jun-18															
1913-D-48-103 FF	Proposed New General Store - Fire Protection Installation Layout	29-Aug-18	K2	26-Jun-18															
1913-D-48-104 DW	Proposed New Security Guard House - Domestic Water Installation Layout	30-Aug-18	K2	26-Jun-18															
1913-D-48-104 FF	Proposed New Security Guard House - Fire Protection Installation Layout	30-Aug-18	K2	26-Jun-18															
1913-D-48-105 ACV	Proposed New Technical Services Centre - Air Conditioning and Ventilation Installation Layout	13-Aug-18	K2	26-Jun-18															
1913-D-48-105 DW	Proposed New Technical Services Centre - Domestic Water Installation Layout	13-Aug-18	K2	26-Jun-18															
1913-D-48-105 FF	Proposed New Technical Services Centre - Fire Protection Installation Layout	29-Aug-18	K2	26-Jun-18															
1913-D-48-106 DW	Proposed New Stand by Accommodation - Domestic Water Installation Layout	30-Aug-18	K2	26-Jun-18															
1913-D-48-106 FF	Proposed New Stand by Accommodation - Fire Protection Installation Layout	30-Aug-18	K2	26-Jun-18															
1913-D-48-106 VENT	Proposed New Stand by Accommodation - Ventilation Installation Layout	31-Aug-18	K2	26-Jun-18															
SCHEDULE OF DRAWINGS																			
Drawing No	Drawing Title	Drawing No	Drawing Title	Drawing No	Drawing Title	Drawing No	Drawing Title	Drawing No	Drawing Title	Drawing No	Drawing Title	Drawing No	Drawing Title	Drawing No	Drawing Title	Drawing No	Drawing Title	Drawing No	Drawing Title
1913-D-48-101 ACV	Proposed New Customer Services Centre - Air Conditioning and Ventilation Installation Layout	1913-D-48-104 FF	Proposed New Security Guard House - Fire Protection Installation Layout																
1913-D-48-101 DW	Proposed New Customer Services Centre - Domestic Water Installation Layout	1913-D-48-105 ACV	Proposed New Technical Services Centre - Air Conditioning and Ventilation Installation Layout																
1913-D-48-101 FF	Proposed New Customer Services Centre - Fire Protection Installation Layout	1913-D-48-105 DW	Proposed New Technical Services Centre - Domestic Water Installation Layout																
1913-D-48-102 ACV	Proposed New Equipment Store - Air Conditioning and Ventilation Installation Layout	1913-D-48-105 FF	Proposed New Technical Services Centre - Fire Protection Installation Layout																
1913-D-48-102 FF	Proposed New Equipment Store - Fire Protection Installation Layout	1913-D-48-106 DW	Proposed New Stand by Accommodation - Domestic Water Installation Layout																
1913-D-48-103 ACV	Proposed New General Store - Air Conditioning and Ventilation Installation Layout	1913-D-48-106 FF	Proposed New Stand by Accommodation - Fire Protection Installation Layout																
1913-D-48-103 DW	Proposed New General Store - Fire Protection Installation Layout	1913-D-48-106 VENT	Proposed New Stand by Accommodation - Ventilation Installation Layout																

Reviewed by:

Date: